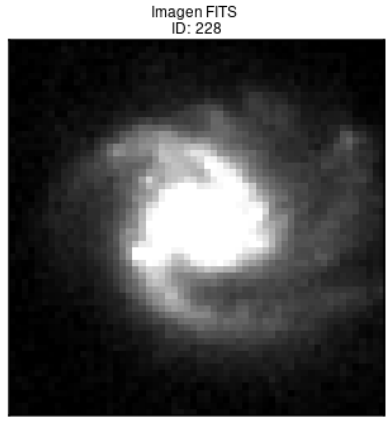
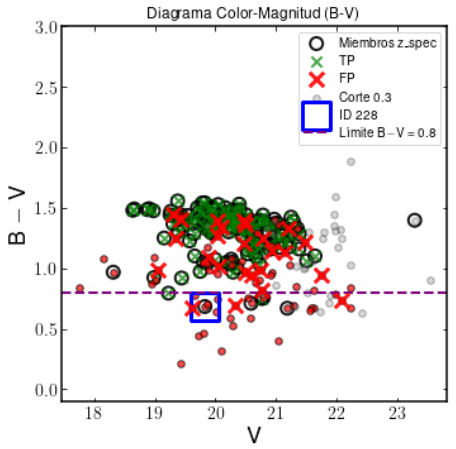
Galaxias ultradifusas en el cúmulo de Coma con NoiseChisel

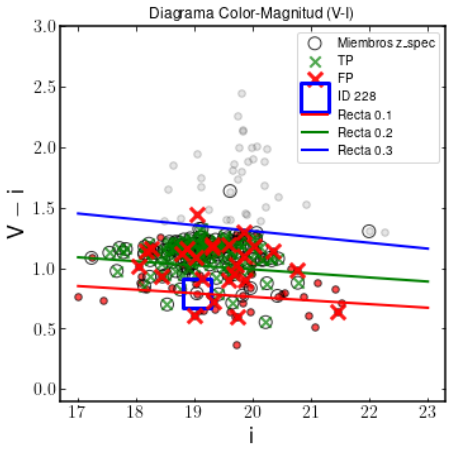
Paula Macías Pardo

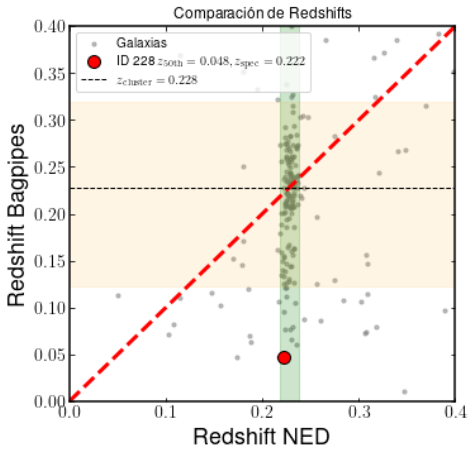
Directores: Armando Gil de Paz, Cristina Catalán Torrecilla

Previamente con los cúmulos de CATARSIS (A2390)







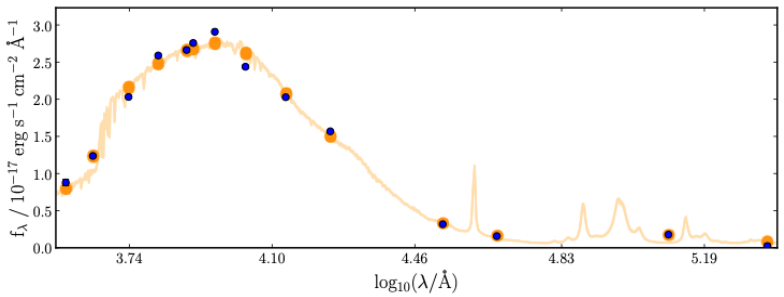


Limitaciones:

Recuperar galaxias azules/de tipos tardíos usando redshifts fotométricos + corte en color

OBJETIVO

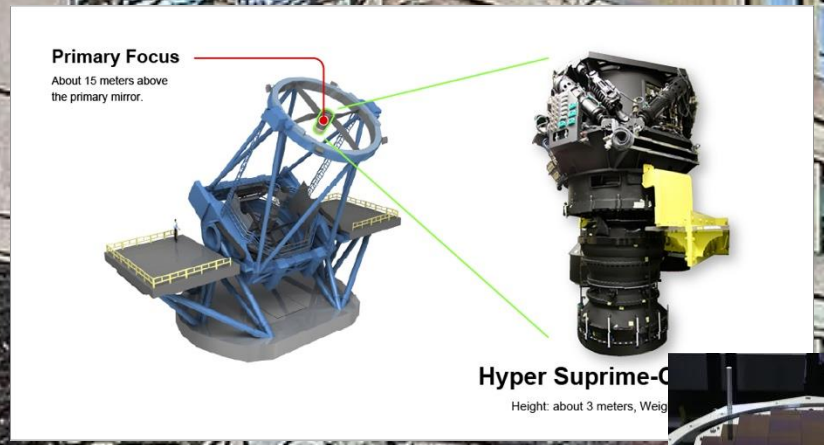
Determinar criterio de membresía al cúmulo usando información morfológica y relaciones de escala + ajustes SED.

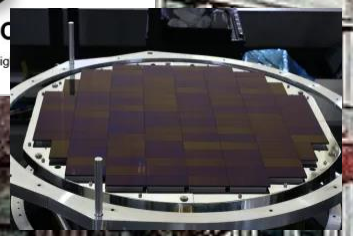


Últimos meses...

Últimos meses...

Jin Koda





8 cúmulos observados con HSC en bandas g y r: A194, A569, A634, A779, A1060, A1367, A1656, A2666

The Astrophysical Journal Letters, 807:L2 (6pp), 2015 July 1 doi:10.1088/2041-8205/807/1/L2

APPROXIMATELY A THOUSAND ULTRA-DIFFUSE GALAXIES IN THE COMA CLUSTER

Jin Koda[1], Masafumi Yagi[2,3], Hitomi Yamanoi[2], and Yutaka Komiyama[2,4]
[1] Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794-3800, USA; jin.koda@stonybrook.edu
[2] Optical and Infrared Astronomy Division, National Astronomical Observatory of Japan, 2-21-1 Osawa, Mitaka, Tokyo, 181-8588, Japan
[3] Department of Advanced Sciences, Hosei University, 3-7-2, Kajinocho, Koganei, Tokyo, 184-8584, Japan
[4] SOKENDAI (The Graduate University for Advanced Studies), Mitaka, Tokyo, 181-8588, Japan
Received 2015 April 28; accepted 2015 June 4; published 2015 June 24

ABSTRACT

We report the discovery of 854 ultra-diffuse galaxies (UDGs) in the Coma cluster using deep *R* band images, with partial *B*, *i*, and Hα band coverage, obtained with the Subaru telescope. Many of them (332) are Milky Way (MW) sized with very large effective radii of $r_e > 1.5$ kpc. This study was motivated by the recent discovery of 47 UDGs by Dokkum et al.; our discovery suggests >1000 UDGs after accounting for the smaller Subaru field (4.1 degree^2; about one-half of Dragonfly). The new Subaru UDGs show a distribution concentrated around the cluster center, strongly suggesting that the great majority are (likely longtime) cluster members. They are a passively evolving population, lying along the red sequence in the color–magnitude diagram with no signature of Hα emission. Star formation was, therefore, quenched in the past. They have exponential light profiles, effective radii $r_e \sim 800$ pc–5 kpc, effective surface brightnesses $\mu_e(R) = 25$–28 mag arcsec^{-2}, and stellar masses $\sim 1 \times 10^7 M_\odot$–$5 \times 10^8 M_\odot$. There is also a population of nucleated UDGs. Some MW-sized UDGs appear closer to the cluster center than previously reported; their survival in the strong tidal field, despite their large sizes, possibly indicates a large dark matter fraction protecting the diffuse stellar component. The indicated baryon fraction $\lesssim 1\%$ is less than the cosmic average, and thus the gas must have been removed (from the possibly massive dark halo). The UDG population is elevated in the Coma cluster compared to the field, indicating that the gas removal mechanism is related primarily to the cluster environment.

Key words: galaxies: clusters: individual (Coma) – galaxies: evolution – galaxies: structure

Objetivos:

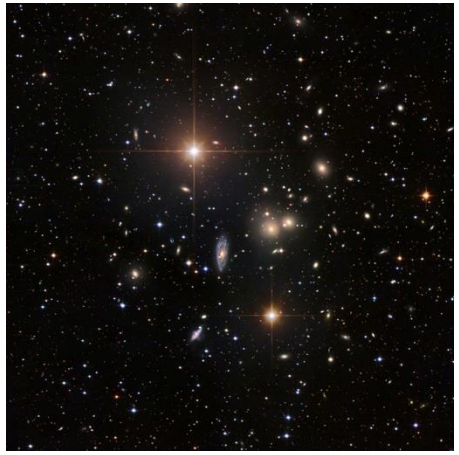
Construcción de catálogos morfológicos

- **Caracterización miembros brillantes**
- **Identificación galaxias ultra-difusas**

Bajo brillo superficial, gran tamaño, masas estelares ~ galaxias enanas

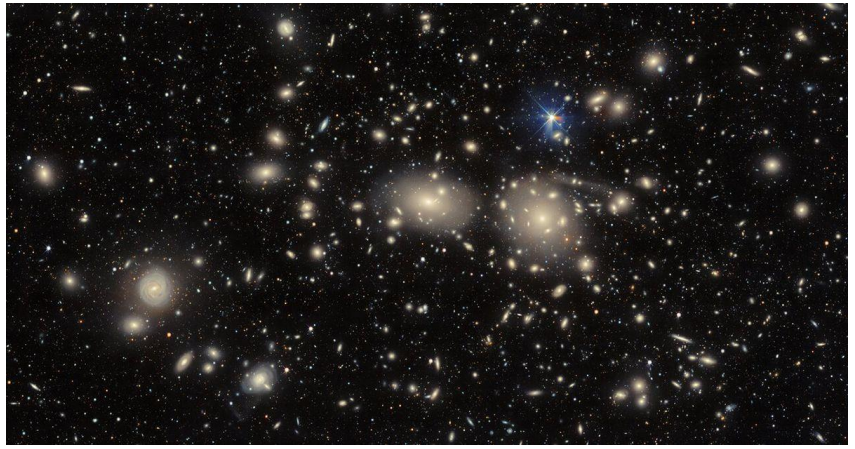
- Gran abundancia
- Conocer su lugar dentro de la población de galaxias.
- Envolturas difusas: difícil identificar su extensión total.

A194



A1060

A1656

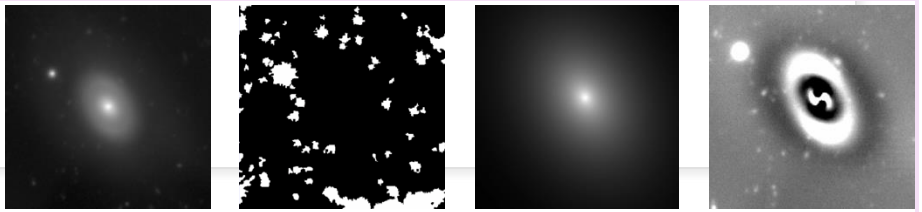


Calibración con UDGs

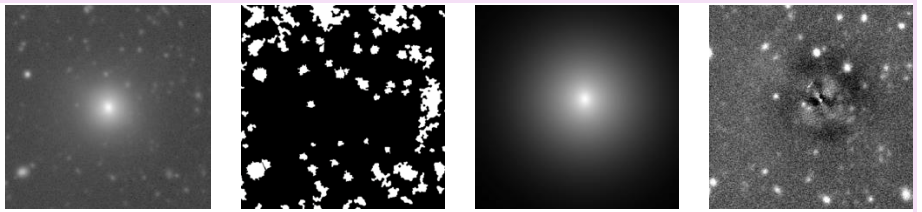
- Imágenes de HSC
- Sustracción de cielo con NoiseChisel
- Calibración (mascaras, método) con UDGs
- Catálogo de candidatos (NoiseChisel + Sextractor)
- Parámetros estructurales con GALFIT

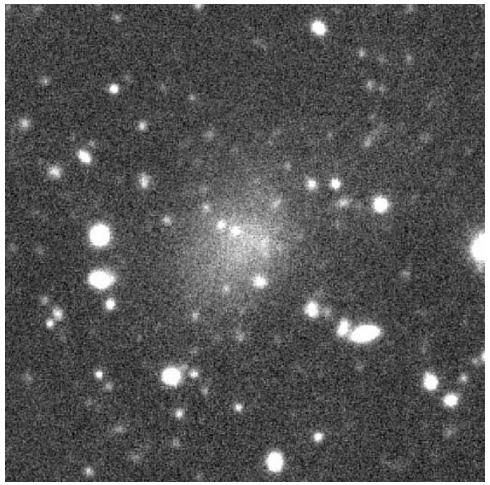
¿ Y las galaxias brillantes?

1 componente de Sérsic:

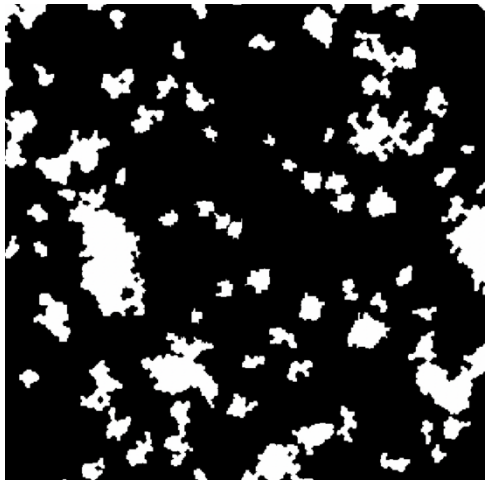


2 componentes de Sérsic:



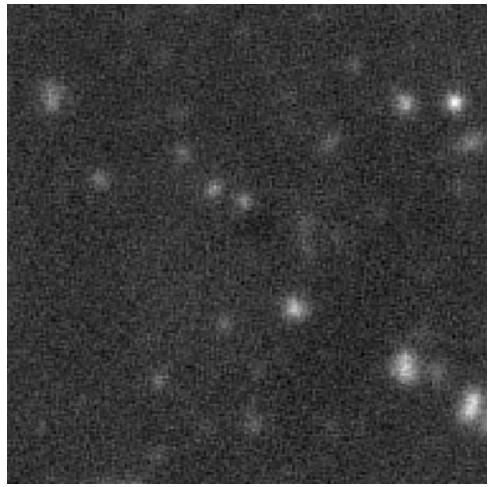


UDG en banda G (400 x 400)



Máscara

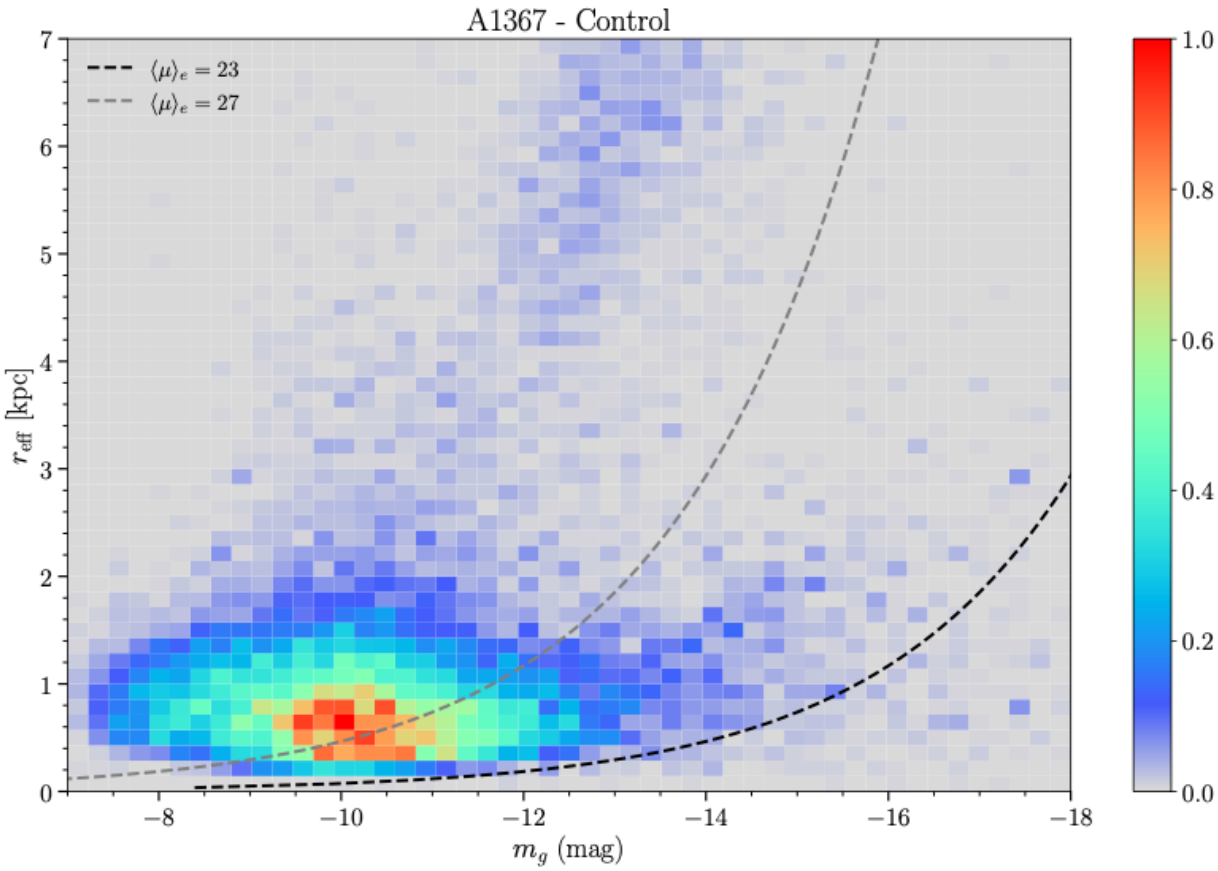
Model



Residual

Trabajo futuro

- Propiedades estructurales de las UDGs en el plano tamaño-luminosidad
- Rol del entorno
- Dependencia radial de parámetros



Gracias!